**The Product Game**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** |
| **7** | **8** | **9** | **10** | **12** | **14** |
| **15** | **16** | **18** | **20** | **21** | **24** |
| **25** | **27** | **28** | **30** | **32** | **35** |
| **36** | **40** | **42** | **45** | **48** | **49** |
| **54** | **56** | **63** | **64** | **72** | **81** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |

**Object of the Game:** To get four squares in a row—vertically, horizontally, or diagonally.

1. To begin the game, Player 1 moves a marker to a number in the factor list of numbers 1-9 along the bottom of the game screen.
2. Player 2 then moves the other marker to any number in the factor list (including the number marked by Player 1). The product of the two marked numbers is determined, and that product is colored red for Player 2.
3. Player 1 moves *either* marker to another number, and the new product is colored blue for Player 1.
4. Players take turns moving a marker, and each product is marked red or blue, depending on which player made the product. However, if a product is already colored, the player does not get a square for that turn.
5. Play continues until one player wins, or until all squares have been colored.

This Product Game Investigation was adapted with permission and guidance from *Prime Time: Factors and Multiples*, [Connected Mathematics Project](http://www.math.msu.edu/cmp/), G. Lappan, J. Fey, W Fitzgerald, S. Friel and E. Phillips, Dale Seymour Publications (1996), pp. 17‑25.

**The Factor Game**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** |
| **7** | **8** | **9** | **10** | **11** | **12** |
| **13** | **14** | **15** | **16** | **17** | **18** |
| **19** | **20** | **21** | **22** | **23** | **24** |
| **25** | **26** | **27** | **28** | **29** | **30** |

**Rules:**

1. Player A chooses a number on the game board and circles it with their color.
2. Player B uses a different color to circle all the proper factors of Player A's number. The proper factors of a number are all the factors of that number, except the number itself. For example, the proper factors of 12 are 1, 2, 3, 4, and 6. Although 12 is a factor of itself, it is not a proper factor.
3. Player B colors a new number, and Player A colors all the factors of the number that are not already colored.
4. The players take turns choosing numbers and coloring factors.
5. If a player choses a number that has no factors left that have not been colored, that player loses a turn and does not get the points for the number colored.
6. The game ends when there are no numbers remaining with uncolored factors.
7. Each player adds the numbers that are colored with his or her color. The player with the greater total is the winner.